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A New Era in Ford Diesel Technology for Pickups Starts Now

Ford Social Member, 8/31/2009

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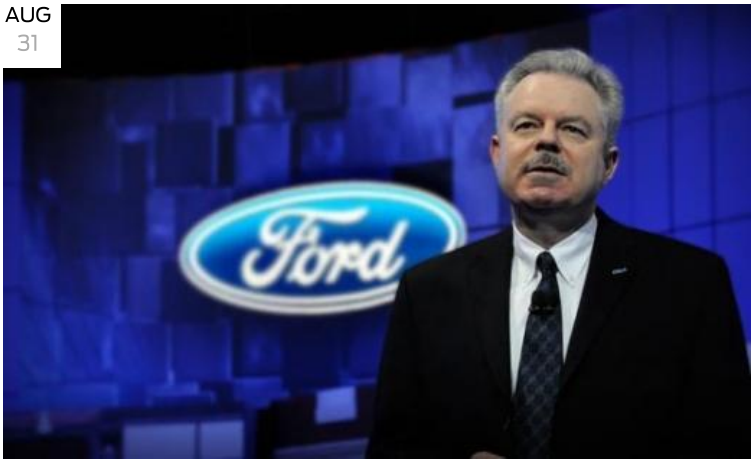

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Developing an all-new engine is a big deal. Variants that extend an engine family are one thing. Making updates for better efficiencies or new applications is another thing. But starting from the block up to design and build an entirely new engine, well, that's big. It's creating something that may last 20 or 30 years into the future. That's exactly the challenge that the team under Derrick Kuzak, group vice president of Global Product Development, faced when they started work on the 6.7-liter Power Stroke® V-8 turbocharged diesel engine.

Debuting in the next-generation, 2011 F-Series Super Duty® truck, the new diesel engine will deliver significant improvements in torque, horsepower and fuel economy while adding more fueling flexibility and meeting stringent new emissions requirements.

"This all-new diesel engine has been so extensively tested both in the lab and in the real world that we're confident we're giving our customers the

most reliable and productive powertrain available today," said Derrick Kuzak, group vice president of Global Product Development. "Our Super Duty customers demand reliability and durability in their trucks so they can deliver the best results for their business and their customers. That's exactly what this engine delivers."

The diesel engine team made improvements and changes throughout the engine architecture to deliver on aggressive horsepower, torque, emissions and fuel economy targets. The 6.7-liter Power Stroke uses an "inboard exhaust" architecture, an automotive-industry first for a modern production diesel engine. It combines the best of proven technology with new, patented approaches backed by an extensive laboratory and real-world testing regimen to assure customer satisfaction.

Benefits of the new 6.7-liter Power Stroke V-8 turbocharged diesel engine include:

- First use of a compacted graphite iron (CGI) engine block in a Super Duty-class vehicle in North America; stronger than regular gray cast iron, Ford has successfully used CGI in engine blocks in products around the world. The block structure was optimized for reduced weight and maximum strength to meet the demands of higher torque and horsepower
- Unique inboard exhaust and outboard intake architecture, an automotive-industry first for a modern production diesel engine, reduces overall exhaust system volume, which leads to better throttle response for the customer; additionally, reduced exhaust system surface area minimizes heat transfer to the engine compartment and improves NVH (noise, vibration, harshness)
- The new engine architecture enables easier service work for all major engine components, potentially reducing down time. On turbocharger service, for example, the body/cab no longer has to be removed from the frame to access the turbo; also, the high-pressure fuel pump, EGR (exhaust gas recirculation) components and thermostats are directly accessible from the front of the vehicle
- Honeywell's single-sequential turbocharger features an industry-first double-sided compressor wheel mounted on a single shaft. The unit is uniquely center-mounted on a pedestal low in the back of the valley for improved NVH. This turbocharger design allows the single unit to deliver the benefits of a twin-turbocharger system in a smaller, more efficient package, combining the benefits of a small turbocharger (faster response) and a large turbocharger (ability to compress and force more air into the engine for more power) in one unit
- The high-pressure Bosch fuel system injects fuel at up to 30,000 psi. The system delivers up to five injection events per cylinder per cycle using eight-hole piezo injectors to spray fuel into the piston bowl. The direct-injection system is calibrated and phased for optimum power, fuel efficiency and NVH
- Aluminum cylinder heads for reduced weight; the mid-deck construction with dual water jackets provides increased strength and optimal cooling; also, six head bolts, instead of four as found on other engines, help improve sealing and maintain cylinder integrity even with the higher firing pressures; overall the engine is about 160 pounds lighter
- Compatibility with up to B20 fuel, allowing greener fueling options of up to 20 percent biodiesel and 80 percent petroleum diesel

"The bar was raised for this new diesel and the Power Stroke team did a fantastic job meeting performance and durability targets," said Adam Gryglak, lead engineering manager for the 6.7-liter Power Stroke engine. "We integrated Ford's best global practices in engine design, development and testing as we pulled together our co-located team, which included engineering, design, manufacturing and purchasing. This helped us get the job done efficiently and quickly while increasing our focus on the product's capability, performance, quality and reliability."

To build team spirit, Gryglak wanted something unique to inspire the organization. The new diesel was code-named "Scorpion," so a mechanical scorpion designed from engine components graced all internal reports. The name also is a nod to one of Gryglak's favorite rock bands.

The result of the team's work is the new Power Stroke V-8 turbocharged

diesel engine, which will deliver significantly improved torque, horsepower and fuel economy while meeting more stringent federal emissions standards that begin in 2010.

To view an informative fact sheet on the all-new 6.7-liter Power Stroke engine, please click here.

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71 COMMENTS ON THIS ARTICLE

Dan S I gave up and built one myself. It gets 40 mpg when driven hard, and 37-38 when I am really in a hurry.
2 year(s) ago via

ray they should have a 25% import tax on everything. maybe then more things would be made in the US
2 year(s) ago via

ray i think the best invention for a vehical was the automatic trans. get with the times. like they said a VERRY SMALL% want stick. a dealer doesnt want to have a truck sit on there lot and hope that 2% person might come in. too big of a investment.
2 year(s) ago via

Cheryl What type of diesel, size, towing strength etc? This is just what we Explorer lovers are looking for. I am a devoted Ford lover with a father of 30+yrs at Ford. Congrats to your students and Ford.
2 year(s) ago via

Tim S One reason we have less truck choices in this country is the 1964 "chicken Tax". Then president Johnson (to please the UAW) imposed a 25% import tax on trucks. This is what is delaying Mahindra's entry with their light duty diesel trucks. Toyota, Honda, and Nissan all manufacture trucks in the USA, partly to avoid this tax. It would take Mahindra years to reach this stage. Meanwhile, we are keeping them out. Volkswagon also makes a light duty diesel pickup. They have said that they will not sell it here due to the tax. I urge everyone to contact their senators and representatives to ask for the

This discussion is missing your voice.

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